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NEWS	4	JUL 02	CHEMCATS accession numbers revised
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NEWS	6	JUL 16	CAPplus enhanced with French and German abstracts
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NEWS	15	AUG 27	USPATOLD now available on STN
NEWS	16	AUG 28	CAS REGISTRY enhanced with additional experimental spectral property data
NEWS	17	SEP 07	STN AnaVist, Version 2.0, now available with Derwent World Patents Index
NEWS	18	SEP 13	FORIS renamed to SOFIS
NEWS	19	SEP 13	INPADOCDB enhanced with monthly SDI frequency
NEWS	20	SEP 17	CA/CAPplus enhanced with printed CA page images from 1967-1998
NEWS	21	SEP 17	CAPplus coverage extended to include traditional medicine patents
NEWS	22	SEP 24	EMBASE, EMBAL, and LEMBASE reloaded with enhancements
NEWS	23	OCT 02	CA/CAPplus enhanced with pre-1907 records from Chemisches Zentralblatt
NEWS	24	OCT 19	BEILSTEIN updated with new compounds
NEWS EXPRESS	19	SEPTEMBER 2007:	CURRENT WINDOWS VERSION IS V8.2, CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP), AND CURRENT DISCOVER FILE IS DATED 19 SEPTEMBER 2007.
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\* \* \* \* \* STN Columbus \* \* \* \* \*

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COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

0.21

0.21

FILE 'CAPLUS' ENTERED AT 11:25:16 ON 27 OCT 2007

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FILE COVERS 1907 - 27 Oct 2007 VOL 147 ISS 19

FILE LAST UPDATED: 26 Oct 2007 (20071026/ED)

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<http://www.cas.org/infopolicy.html>

=> s carbon monoxide (s) cryogenic distill?

1316750 CARBON

28064 CARBONS

1326698 CARBON

(CARBON OR CARBONS)

187809 MONOXIDE

1031 MONOXIDES

188356 MONOXIDE

(MONOXIDE OR MONOXIDES)

158974 CARBON MONOXIDE

(CARBON(W) MONOXIDE)

31075 CRYOGENIC

6427 CRYOGENICS

33443 CRYOGENIC

(CRYOGENIC OR CRYOGENICS)

129786 DISTILL?

167240 DISTD

1 DISTDS

167240 DISTD

(DISTD OR DISTDS)

26835 DISTG

179229 DISTN

1808 DISTNS

179974 DISTN

(DISTN OR DISTNS)

391511 DISTILL?

(DISTILL? OR DISTD OR DISTG OR DISTN)

1047 CRYOGENIC DISTILL?

(CRYOGENIC(W) DISTILL?)

L1

35 CARBON MONOXIDE (S) CRYOGENIC DISTILL?

=> s l1 and carbon monoxide (s) hydrogen (s) nitrogen

1316750 CARBON

28064 CARBONS

1326698 CARBON

(CARBON OR CARBONS)

187809 MONOXIDE

1031 MONOXIDES

188356 MONOXIDE

(MONOXIDE OR MONOXIDES)

158974 CARBON MONOXIDE

(CARBON(W) MONOXIDE)

1023361 HYDROGEN

6067 HYDROGENS

1026735 HYDROGEN

(HYDROGEN OR HYDROGENS)

670114 NITROGEN

3987 NITROGENS

672920 NITROGEN

(NITROGEN OR NITROGENS)

1031 CARBON MONOXIDE (S) HYDROGEN (S) NITROGEN

L2 7 L1 AND CARBON MONOXIDE (S) HYDROGEN (S) NITROGEN

=> s l2 and turbine

42594 TURBINE

27812 TURBINES

48395 TURBINE

(TURBINE OR TURBINES)

L3 2 L2 AND TURBINE

=> s l2 or l3

L4 7 L2 OR L3

=> d l4 ibib ab 1-7

L4 ANSWER 1 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:1284997 CAPLUS

DOCUMENT NUMBER: 147:97884

TITLE: Trace carbon monoxide and hydrogen  
conversion prior to cryogenic  
distillation of air

AUTHOR(S): Kumar, R.; Deng, S.

CORPORATE SOURCE: Chemical Engineering Department, New Mexico State  
University, Las Cruces, NM, 88003-8001, USA

SOURCE: Adsorption (2006), 12(5-6), 361-373  
CODEN: ADSOFO; ISSN: 0929-5607

PUBLISHER: Springer

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Liquid Nitrogen is required in the semiconductor industry. This is generally produced by cryogenic distillation of air. However, trace levels of Carbon Monoxide and Hydrogen need to be removed from Nitrogen prior to its use in the semiconductor industry. This may be accomplished by catalytic conversion of trace Carbon Monoxide and Hydrogen to Carbon dioxide and Water, resp. These impurities (Carbon dioxide and Water) are then removed by adsorption from air. The latest technol. is to incorporate the catalytic conversion into adsorption based thermal swing pre-purification units, which are already used to remove Water and Carbon dioxide from air prior to its cryogenic distillation. Our expts. show that even though Hydrogen is converted to Water by a catalytic reaction, presence of Carbon dioxide in this stream significantly lowers the performance of the catalyst by as much as five-fold. Also, Hydrogen removal by the novel metal Pd catalyst does not follow a typical catalyst behavior but an adsorption breakthrough type

behavior, i.e. for a constant inlet concentration the outlet concentration of Hydrogen breaks through at some time and then increases with time. On the other hand, Carbon monoxide conversion on a Hopcalite type catalyst follows typical catalyst behavior, i.e. for a constant inlet concentration the outlet concentration of Carbon monoxide is constant and does not change with time.

Exptl.

data demonstrating these effects followed by a theor. explanation are presented.

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 2 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:301878 CAPLUS

DOCUMENT NUMBER: 142:357374

TITLE: Apparatus and process for separation of a gas mixture by cryogenic distillation

INVENTOR(S): Tranier, Jean Pierre

PATENT ASSIGNEE(S): L'air Liquide Societe Anonyme Pour L'etude Et L'exploitation Des Procedes Georges Claude, Fr.

SOURCE: Fr. Demande, 14 pp.

CODEN: FRXXBL

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2860576	A1	20050408	FR 2003-50630	20031001
WO 2005033600	A1	20050414	WO 2004-FR50450	20040921
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
EP 1671070	A1	20060621	EP 2004-817100	20040921
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK			
CN 1860339	A	20061108	CN 2004-80028567	20040921
JP 2007507682	T	20070329	JP 2006-530448	20040921
US 2007000282	A1	20070104	US 2006-573903	20060329
PRIORITY APPLN. INFO.:			FR 2003-50630	A 20031001
			WO 2004-FR50450	W 20040921

AB In an apparatus for gas separation by cryogenic distillation, the sep. gases are removed

in sep. steps. Thus, oxygen and/or nitrogen and/or hydrogen and/or methane and/or carbon monoxide are separated out in appropriate columns. The turbines used in the process may have gas bearings, roller bearings, or magnetic bearings.

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 3 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:120531 CAPLUS

DOCUMENT NUMBER: 140:130539

TITLE: Process and installation for production of carbon monoxide by cryogenic

INVENTOR(S): distillation  
 PATENT ASSIGNEE(S): Fauroux, Daniele  
 SOURCE: L'Air Liquide Societe Anonyme pour l'Etude et  
 l'Exploitation des Procedes Georges Claude, Fr.  
 CODEN: FRXXBL  
 DOCUMENT TYPE: Patent  
 LANGUAGE: French  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2843447	A1	20040213	FR 2003-50621	20030930
WO 2005033599	A1	20050414	WO 2004-FR50446	20040921
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1682836	A1	20060726	EP 2004-817099	20040921
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
CN 1860338	A	20061108	CN 2004-80028427	20040921
JP 2007507337	T	20070329	JP 2006-530447	20040921
US 2007151291	A1	20070705	US 2006-572668	20060927
PRIORITY APPLN. INFO.:			FR 2003-50621	A 20030930
			WO 2004-FR50446	W 20040921

AB Carbon monoxide is separated from a gas mixture, e.g.,  
 syngas, by cryogenic distn. in a two-stage process.  
 First, the mixture of carbon monoxide, hydrogen  
 and nitrogen is cooled and partially condensed to produce a gas  
 enriched in hydrogen and a liquid enriched in carbon  
 monoxide. The liquid enriched in carbon monoxide is then passed  
 through a stripping column to produce liquid carbon monoxide low in hydrogen  
 and gaseous carbon monoxide enriched in hydrogen. The low-  
 hydrogen carbon monoxide is fractionated, a  
 methane-rich stream is recovered first, a carbon  
 monoxide-rich stream second, and nitrogen, possibly  
 containing hydrogen is recovered from the head gases.

L4 ANSWER 4 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2001:881012 CAPLUS  
 DOCUMENT NUMBER: 136:249567  
 TITLE: Insulation system  
 AUTHOR(S): Anon.  
 CORPORATE SOURCE: UK  
 SOURCE: Research Disclosure (2001), 451(Nov.), P1873 (No.  
 451060)  
 CODEN: RSDSBB; ISSN: 0374-4353  
 PUBLISHER: Kenneth Mason Publications Ltd.  
 DOCUMENT TYPE: Journal; Patent  
 LANGUAGE: English  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
RD 451060		20011110		

PRIORITY APPLN. INFO.:

RD 2001-451060

20011110

AB An insulation techniques that are suitable for any kind of cryogenic distn. system (e.g., air separation, separation of carbon monoxide-hydrogen-nitrogen (methane)) mixts. are described. Columns, turbines, heat exchangers, conduits, and other elements that are operating at cryogenic temps. are placed in a single wall closed cold box with inside wall covered with insulating material. The thermal insulator is sprayed on the surface in one or several layers. The space between the cold box and insulating layer can be evacuated or can contain air. If the space between the cold box contains air, the elements in the cold box operating at high temperature must be clad to prevent heat transfer by radiation and convection in the absence of insulating material around the elements in the cold box. If the cold box is eliminated completely or partially, the insulation is applied directly onto the outer column walls and heat exchanger, storage tanks, and conduits are insulated by spraying by using spray gun. Elements with moving parts (e.g., turbines, valves, or pumps) can be enclosed individually or enclosed together in common housing and the insulation can be applied on the housing walls. The heat exchanger can be insulated by applying the insulating material directly by reducing the size of the cold box. The maintenance of the cryogenic separation unit by making hole in the insulating material to gain access to the component to be repaired. After finishing the repair work more insulation can be applied to block the hole. The insulating material is described in EP-A-1124088.

L4 ANSWER 5 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:410587 CAPLUS

DOCUMENT NUMBER: 127:36664

TITLE: Recovery of carbon monoxide from nitrogen-contaminated gas mixture containing hydrogen, carbon monoxide, and methane

INVENTOR(S): Fabian, Rainer

PATENT ASSIGNEE(S): Linde Ag, Germany

SOURCE: Ger. Offen., 11 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19541339	A1	19970507	DE 1995-19541339	19951106
DE 19541339	B4	20060810		

PRIORITY APPLN. INFO.: DE 1995-19541339 19951106

AB The procedure involves (1) cooling and partial condensation of a H<sub>2</sub>-CO-CH<sub>4</sub> mixture containing N<sub>2</sub>, (2) withdrawal of 1st H<sub>2</sub>-rich gaseous fraction, (3) charging of a H<sub>2</sub>-CO-CH<sub>4</sub>-N<sub>2</sub> condensate to a H<sub>2</sub>-stripping column, (4) separation of a 2nd H<sub>2</sub>-rich fraction and a CO-rich fraction containing CH<sub>4</sub> and N<sub>2</sub>, (5) separation of the latter fraction in a 1st rectification column to obtain a N<sub>2</sub>-rich fraction and CO-rich fraction containing CH<sub>4</sub>, (6) charging of the latter fraction into a 2nd rectification column to obtain a high-purity CO fraction and a CH<sub>4</sub>-containing fraction.

L4 ANSWER 6 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1995:902914 CAPLUS

DOCUMENT NUMBER: 123:291148

TITLE: Process and cryogenic distillation apparatus for manufacturing carbon monoxide from carbon monoxide-hydrogen gas mixtures containing nitrogen and methane as

INVENTOR(S): additional constituents  
 Billy, Jean; Granier, Francois  
 PATENT ASSIGNEE(S): Air Liquide SA pour l'Etude et l'Exploitation des  
 Procèdes Georges Claude, Fr.  
 SOURCE: Eur. Pat. Appl., 12 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: French  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 676373	A1	19951011	EP 1995-400751	19950404
EP 676373	B1	19980916		
R: BE, DE, ES, FR, GB, NL				
FR 2718428	A1	19951013	FR 1994-4219	19940411
FR 2718428	B1	19971010		
IN 191256	A1	20031018	IN 1994-DE1349	19941025
US 5609040	A	19970311	US 1995-411878	19950328
ES 2122468	T3	19981216	ES 1995-400751	19950404
CA 2146736	C	19951012	CA 1995-2146736	19950410
CA 2146736	A1	19951012		
JP 08081211	A	19960326	JP 1995-84384	19950410
JP 3917198	B2	20070523		
CN 1117574	A	19960228	CN 1995-104309	19950411

PRIORITY APPLN. INFO.: FR 1994-4219 A 19940411

AB In this process, in which the CO is separated from the other constituents by distillation under intermediate pressure in a 1st column in which the CH<sub>4</sub> is removed as bottom product, and by distillation in a 2nd column to recover the CO, liquid is expanded to cool the the head of one of the 2 columns, and liquid is withdrawn from an intermediate location in the column as reflux in the other column. The head of one of the columns is connected to an intermediate stage of the other column. This method lowers energy consumption, and the apparatus is discussed with schematic flow diagrams.

L4 ANSWER 7 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1991:167235 CAPLUS  
 DOCUMENT NUMBER: 114:167235  
 TITLE: Manufacture of carbon monoxide and/or argon  
 INVENTOR(S): Bauer, Heinz  
 PATENT ASSIGNEE(S): Linde A.-G., Germany  
 SOURCE: Ger. Offen., 5 pp.  
 CODEN: GWXXBX  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3925662	A1	19910207	DE 1989-3925662	19890803
			DE 1989-3925662	19890803

PRIORITY APPLN. INFO.:

AB In the title process, in which a feed gas consisting of H, N, CO, and impurities, e.g., Ar, and, optionally, CH<sub>4</sub>, is scrubbed with N(l) at superatm. pressure and lower than ambient temps. to give a liquid scrubber effluent consisting of N, CO, the impurities, and some H and then separated into  $\geq 1$  product streams in  $\geq 1$  cryogenic distillation stages, the overhead stream from the 1st distillation stage is partially condensed in a condenser cooled with N(l). The bottom stream from this 1st stage is partially evaporated by heat exchange with condensing N, resulting in a CO(l)-rich product stream and a Ar(l)-containing bottom stream. This process permits the recovery of CO and/or Ar from the effluent from scrubbing of crude NH<sub>3</sub> synthesis gas.

=> file ca

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

44.01

44.22

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE

TOTAL

ENTRY

SESSION

CA SUBSCRIBER PRICE

-5.46

-5.46

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FILE COVERS 1907 - 25 Oct 2007 VOL 147 ISS 19

FILE LAST UPDATED: 25 Oct 2007 (20071025/ED)

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=> s de 19541339/pn

L5 1 DE 19541339/PN  
(DE19541339/PN)

=> d 15 iall

L5 ANSWER 1 OF 1 CA COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 127:36664 CA

ENTRY DATE: Entered STN: 15 Jul 1997

TITLE: Recovery of carbon monoxide from nitrogen-contaminated gas mixture containing hydrogen, carbon monoxide, and methane

INVENTOR(S): Fabian, Rainer

PATENT ASSIGNEE(S): Linde Ag, Germany

SOURCE: Ger. Offen., 11 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

INT. PATENT CLASSIF.:

MAIN: C01B031-18

SECONDARY: C01B003-50

ADDITIONAL: C07C009-04; C07C051-15

CLASSIFICATION: 49-2 (Industrial Inorganic Chemicals)

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.

KIND

DATE

APPLICATION NO.

DATE



DE 19541339	A1	19970507	DE 1995-19541339	19951106 <--
DE 19541339	B4	20060810		
PRIORITY APPLN. INFO.:			DE 1995-19541339	19951106

PATENT CLASSIFICATION CODES:

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
DE 19541339	ICM	C01B031-18
	ICS	C01B003-50
	ICA	C07C009-04; C07C051-15
	IPCI	C01B0031-18 [I,A]; C01B0031-00 [I,C*]; C01B0003-50 [I,A]; C01B0003-00 [I,C*]
	IPCR	C01B0003-00 [I,C*]; C01B0003-50 [I,A]; C01B0031-00 [I,C*]; C01B0031-18 [I,A]; F25J0003-02 [I,A]; F25J0003-02 [I,C*]; F25J0003-06 [I,A]; F25J0003-06 [I,C*]
	ECLA	C01B003/50D; C01B031/18; F25J003/02A6; F25J003/02C14; F25J003/02C10; F25J003/06C10

ABSTRACT:

The procedure involves (1) cooling and partial condensation of a H<sub>2</sub>-CO-CH<sub>4</sub> mixture containing N<sub>2</sub>, (2) withdrawal of 1st H<sub>2</sub>-rich gaseous fraction, (3) charging of a H<sub>2</sub>-CO-CH<sub>4</sub>-N<sub>2</sub> condensate to a H<sub>2</sub>-stripping column, (4) separation of a 2nd H<sub>2</sub>-rich fraction and a CO-rich fraction containing CH<sub>4</sub> and N<sub>2</sub>, (5) separation of the latter fraction in a 1st rectification column to obtain a N<sub>2</sub>-rich fraction and CO-rich fraction containing CH<sub>4</sub>, (6) charging of the latter fraction into a 2nd rectification column to obtain a high-purity CO fraction and a CH<sub>4</sub>-containing fraction.

SUPPL. TERM:	carbon monoxide recovery cryogenic distn
INDEX TERM:	630-08-0P, Carbon monoxide, preparation
	ROLE: PUR (Purification or recovery); PREP (Preparation)
	(recovery of carbon monoxide from nitrogen-contaminated gas mixture containing hydrogen, carbon monoxide, and methane)
INDEX TERM:	74-82-8, Methane, processes 1333-74-0, Hydrogen, processes
	7727-37-9, Nitrogen, processes
	ROLE: REM (Removal or disposal); PROC (Process)
	(removal in recovery of carbon monoxide from nitrogen-contaminated gas mixture containing hydrogen, carbon monoxide, and methane)

## WEST Search History

DATE: Saturday, October 27, 2007

Hide?	<u>Set</u> <u>Name</u>	<u>Query</u>	<u>Hit</u> <u>Count</u>
		<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L6	L5 and (single distillation column or fewer near3 column or only one distillation column)	3
<input type="checkbox"/>	L5	L4 and carbon monoxide with hydrogen with nitrogen	43
<input type="checkbox"/>	L4	carbon monoxide with cryogenic distillation	88
		<i>DB=PGPB,USPT; THES=ASSIGNEE; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L3	L2 and reboiler	1
<input type="checkbox"/>	L2	L1 and turbine	1
<input type="checkbox"/>	L1	5609040.pn.	1

END OF SEARCH HISTORY